

The impact of cultural congruence on the creative thinking of primary school children

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Background. There have been many psychological studies, which show what factors enhance creative thinking in childhood, including studies on the impact of intelligence, personality, self-esteem, and other characteristics. But little is known of the impact of cultural congruence on the enhancement of creative thinking in childhood. In that regard, it would be interesting to explore whether cultural congruence influences the enhancement of the creative thinking of primary school students.

Objective. This study is aimed at examining the impact of cultural congruence on enhancing the creative thinking of primary school students. Cultural congruence can be described as a personality trait based on compliance with the rules which a society determines appropriate according to age and culture. 303 respondents participated in this study, of which 293 were primary school students aged 8-10 years ($M=9$, $\sigma\pm 0.5$), and 10 were primary school teachers who worked with these children.

Results. The results of this study indicate that children's compliance with the rules of age-specific normative situations — i.e. the level of cultural congruence— correlate, albeit negatively, with expressions of creative thinking.

Conclusion. The findings in this study provide further evidence of reasons for enhancing creative thinking in childhood, where cultural congruence and its factors defining the preschool child's compliance with the rules in a normative situation influence the enhancement of the creative thinking of primary school students. This paper is aimed at identifying the impact of cultural congruence and its factors on the creative thinking of primary school students. The previously highlighted fact that cultural congruence has an impact on creative thinking of primary school students may be ascribed to various causes. First of all, it is noteworthy that there are no typical invariable rules within the factors making up cultural congruence which would enhance a child's creative thinking. This provision defines the essence of the cultural context and the culturally shaped rules regulating the child's behavior. Thus, the impact of cultural congruence is that it limits creative thinking. This tendency is noticeable in elementary school. The impact of cultural congruence on creative thinking also deals with the fact that socially accepted conventions limit children's spontaneous activity, since the rules impose particular behavioral patterns on them. Therefore, children focus more on imitation than on finding their own solutions. Not coincidentally, cultural congruence had an impact on subtests,

which measured creative thinking through non-verbal materials. These materials dealt with the child's ability to find unusual ways to use everyday objects, to forecast different consequences of a hypothetical situation, to make specific objects with a set of shapes, to create new drawings from identical figures, and to find figures hidden in poorly structured images.

Keywords: creative thinking, cultural congruence, normative situations, rules, norms, behavior, primary school student.

Introduction

Psychologists have conducted a lot of research on factors that are supposed to nurture creativity at a young age. These studies have a hands-on application for modern educational practice. There has been research on the impact of instructional style on early creative development in children (Leggett, 2017), (Alajmi, 2012), (Sali, Akyol, 2015), (Fryer & Collings, 1991). The studies of the correlation between personality traits and creative thinking have established that the degree of self-esteem and self-control evinced by primary school students is linked to creativity (Y. Wang & L. Wang, 2016). The series of studies conducted by other researchers in this area have focused on exposing the character of the correlation between creative thinking and self-esteem through regulatory focus, i.e. independent self-evaluation by a child while executing tasks. Different ways of regulating some mental aspects between motivation of a person and the way in which he/she achieves the goal, called regulative focus, have a great influence on behavior and personality. (Jin et al., 2016).

Cross-cultural comparison of creativity in children has come to the fore in recent years, e.g. in investigations by P.C. Cheung, S. Lau, T. Lubart, D.H.W. Chu, and M. Storme. These studies revealed differences in creativity between Chinese children in Hong Kong and French children in Paris (Cheung et al., 2016); differences in the relationship between intelligence and creative thinking in Chinese children in urban and rural areas (Shi et al, 2016); and higher creative capability among school students in a culturally diverse environment (Petre, 2011; Fryer, 2014).

Many researchers have highlighted the role of art in developing children's creativity. For instance, P.R. Webster called children "creative thinkers in music" (Webster, 2008). An experimental study by T. Koutsoupidou and D.J. Hargreaves demonstrated the effects of improvisation on the development of children's creative thinking (Koutsoupidou & Hargreaves, 2009). K. Young-Mi, and H. Hye-Jeon designed an integrated dance educational program for elementary school students which showed the role of dance in improving the creative thinking ability (Young-Mi et al., 2016).

We find it interesting to study the relationship between child behavior patterns developed as part of the socialization process, and their levels of creative thinking. Each culture dictates its own rules of behavior. A child grows up in a cultural environment and learns to behave in line with the rules. Compliance with rules has been the subject of investigation in contemporary developmental psychology. Among the most recent practical research on rule compliance are papers by T. Kushnir and N. Chernyak from Cornell University (USA); E. Jordan and A. Cowan

from the University of Newcastle (Australia); R. Kapitany, M. Nielsen, and R. Elkins from the University of Queensland (Australia); D. Mullins and M.S. Tisak from Bowling Green State University (Ohio, USA); and others. We have previously presented a detailed theoretical review of research on rule compliance (Bayanova & Bayramyan, 2016). Most of the empirical research employs the CBCL (Children Behavior Check List) to analyze the rule-following behavior. Our papers looked at child behavior as an age- and culture-specific function, an assessment linked to Lev Vygotsky's theory.

According to Lev Vygotsky, each age is characterized by a specific social situation, i.e. a pattern of interaction with other people that is conducive to a child's development (Vygotsky, 1956). The adult uses this social situation as a setting for passing on to the child a set of cultural rules that are to regulate his or her behavior. Each age has its own set of rules. The more age-specific rules a child fits into his or her behavior, the more culturally congruent he or she is.

In our research, we identified typical cultural rules that regulate the behavior of pre-school and primary school children. We then designed diagnostic tests that help to reveal the degree of a child's cultural congruence, or, in other words, the extent to which a child's behavior fits certain age-specific rules (Bayanova & Mustafin, 2016; Bayanova et al., 2016). Our study on pre-school children revealed an inverse correlation between the level of a child's cultural congruence and their creativity. Essentially, the more rule-fitting behavior a child demonstrates, the less creative he or she is (Bayanova, 2013). We then proceeded to find out whether the same trend of an inverse correlation continues into the primary school age.

It is vital for instructional purposes to establish what impact cultural congruence has on the primary school students' creative capacity. Following enrollment, children's behavior becomes increasingly limited by school rules; they are less free to do what they want and spend less time on their own. More often than not, children find themselves not just in a social situation, but in a situation that N. Veraksa has called "normative" (Veraksa, 2000). Any normative situation has rules that regulate behavior. A normative situation imposes upon a child the need to comply with culturally agreeable requirements, norms, and typical rules set for a certain age.

Method

The present research was designed to study how cultural congruence, as a personality trait in the form of compliance with the rules of a normative situation, can impact creative thinking in primary school students.

Out of 303 respondents, there were 293 primary school students aged between 8 and 10 ($M=9$, $\sigma\pm0.5$), plus 10 of their instructors.

In conducting the study, we fully complied with the ethics of working with children and the ethical standards of child-related studies that have been adopted by the Child Development Research Society. All the respondents' parents were informed and submitted their consent.

The following diagnostics tests were selected to fit the study's main objective:

1. A battery of Creative Thinking Tests designed by E.E. Tunik, a modified version of Guilford's and Torrance's tests for primary school children (Tunik, 2002). The tests focus on originality, accuracy, fluency, and flexibility.

2. The Cultural Congruence Test for primary school students designed by L.F. Bayanova, E.A. Tsivilskaya, R. M. Bayramyan, and K.S. Chulyukin (Bayanova et al., 2016). It features six factors: *social interaction*, *academic competence*, *self-control*, *obedience*, *self-service*, and *regulation*. Each factor consists of several primary school age-specific rules that define a child's behavior. The instructor is supposed to benchmark the behavior of primary school students against the rules, i.e. their cultural congruence.

We relied on correlation and single factor dispersion analysis for the mathematical and empirical data analysis. Data processing was done with the help of professional software, SPSS Statistics 22.0.

The study was carried out in several steps:

Step 1. A battery of Creative Thinking Tests for primary school students, including seven subtests for four factors—fluency, originality, flexibility, and accuracy. The primary school students were offered a battery of tests with verbal, logical, figurative, and projective tasks. Each task (a subtest) had to be completed within a fixed time period, during which the respondents had to give/add as many original answers as possible, and find/add details to the shapes. The results of each subtest were measured in scores based on the number and originality of the answers. A total score was calculated for each subtest, and then an aggregate score was calculated as a measure of a child's creative thinking.

Step 2. Then we administered the Cultural Congruence Test for primary school students with its six factors—*social interaction*, *academic competence*, *self-control*, *obedience*, *self-service*, and *regulation*. Each factor was represented by statements describing rules and situations applicable to primary school age children living in a big Russian city. A questionnaire was handed out to the primary school instructors who were believed to be instrumental in passing down those rules to the primary school students. The total score on each of the factors was calculated in line with the test keys.

Step 3. Running the Pearson correlation analysis with professional software SPSS Statistics 22.0 to calculate the correlation coefficient, and identify the link between cultural congruence factors and creative thinking.

Step 4. Running the single factor dispersion analysis with professional software SPSS Statistics 22.0 to measure the impact of each of the cultural congruence factors on the total creativity score of the primary school student.

The study used individual and frontal forms, with instructions read out loud to the respondents, and a limited time frame.

Results

The research outcomes included quantitative and qualitative test data, as well as data from the correlation analysis and the single factor dispersion analysis.

In the case of Tunik's Creative Thinking Test, total scores for each of the seven subtests were calculated, and then an aggregate tally reflecting the level of creative thinking was calculated for each respondent across the verbal and figurative creativity parameters. A majority, i.e. 57 percent of the respondents, displayed an av-

erage tally in terms of creative thinking. Twenty-three percent of primary school students had higher than average scores. A lesser number of primary school students (20 percent) did not provide unusual or original answers to the verbal and projective assignments, a sign of a low level of creative thinking.

In the case of the Cultural Congruence Test for primary school students, total scores for each of the six factors that collectively define the level of cultural congruence, were calculated across the sample. The results were: *social interaction*=19.16%; *regulation*=11.17%; *academic competence*=17.27%; *obedience*=20.32%; *self-service*=11.02%; and *self-control*=19.06%.

Each factor was represented by statements describing rules inherent in the primary school setting. These data show that the respondents exhibited average (40%) and high (35%) levels of cultural congruence, a conclusion which reflects a primary school student's commitment to following all age-specific rules, norms, regulations, and requirements in a bid to get approval from their reference groups (instructors, parents). Twenty-five percent of the respondents demonstrated a low level of cultural congruence, a signal that their behavior was not in line with the most typical rules inherent in normative situations.

Table 1. Impact of cultural congruence on creative thinking for primary school students, if N=293

ANOVA						
Factors		SS	DoF	MS	F	Value
cultural congruence	Between groups	61291,894	104	589,345	2.767	.000
	Within groups	40039,922	118	212,978		
social interaction	Between groups	43391,766	27	1607,102	7.350	.000
	Within groups	57940,050	265	218,642		
academic competence	Between groups	43221,462	26	1662,364	7.609	.000
	Within groups	58110,354	266	218,460		
self-control	Between groups	43991,752	26	1691,990	7.849	.000
	Within groups	57340,063	266	215,564		
obedience	Between groups	42768,561	25	1710,742	7.800	.,000
	Within groups	58563,255	267	219,338		
self-service	Between groups	37247,768	15	2483,185	10.733	.000
	Within groups	64084,048	277	231,350		
regulation	Between groups	43112,063	16	2694,504	12.774	.000
	Within groups	58219,753	276	210,941		

The tests and score calculations were followed by the single factor ANOVA for related samples to verify our hypothesis. Each of the cultural congruence factors was taken as an independent variable and defined as a key one, while creative thinking was exposed to these factors as a dependent variable. *Table 1* provides the

results of the single factor dispersion analysis, along with calculations for Fisher's F , as well as intermediary data on the sum of squares, degrees of freedom, mean square, and the significance of the differences.

The scores presented in the ANOVA table show credible differences in the variables at a significant level. Cultural congruence does have an impact on creative thinking as shown by $F(\text{emp.})=2.767$ (if $p \leq 0.01$). The biggest positive impact on creative thinking is produced by all the tested elements of cultural congruence. According to the study's outcome, the impact of cultural congruence factors on the respondents' creative thinking varies. *Regulation* and *self-service* have the biggest effects, with $F(\text{emp.})=12.777$ (if $p \leq 0.01$) and $F(\text{emp.})=10.733$ (if $p \leq 0.01$), respectively. This result serves as evidence that the level of attribute variation depends on the variable, which reflects the higher impact of these factors on creative thinking for primary school students.

A more detailed analysis of the impact of cultural congruence on creative thinking produced the following results (*Table 2*).

Table 2. Impact of cultural congruence on creative thinking subtests, if $N=293$

		ANOVA				
		SS	DoF	MS	F	Value
Use of objects	Between groups	1608,564	104	15,467	2.935	.000
	Within groups	990,617	188	5,269		
	Total	2599,181	292			
Situation consequences	Between groups	1120,212	104	10,771	2.048	.000
	Within groups	988,716	188	5,259		
	Total	2108,928	292			
Expression	Between groups	1150,317	104	11,061	1.439	.016
	Within groups	1444,769	188	7,685		
	Total	2595,085	292			
Verbal association	Between groups	1398,472	104	13,447	1.413	.021
	Within groups	1789,508	188	9,519		
	Total	3187,980	292			
Building images	Between groups	1908,355	104	18,350	2.294	.000
	Within groups	1503,863	188	7,999		
	Total	3412,218	292			
Sketches	Between groups	2486,062	104	23,904	2.429	.000
	Within groups	1849,985	188	9,840		
	Total	4336,048	292			
Hidden form	Between groups	2320,518	104	22,313	1.861	.000
	Within groups	2254,158	188	11,990		
	Total	4574,676	292			

The general trend that cultural congruence has an impact on critical thinking subtests remains, but it's now clear that it has an impact on different aspects of creative thinking.

Our study also revealed that children who have a low level of cultural congruence, and do not comply with the rules of a normative situation, exhibit a higher capacity for creative thinking in verbal and figurative functions. Conversely, a higher level of cultural congruence entails fewer signs of the capacity for creative thinking, which represents the antinomy of this phenomenon. On the one hand, a child is committed to unconditional compliance with all the requirements, regulations, rules, and the regimen as a whole; on the other hand, a child needs to expressly demonstrate creativity. This paradox was documented in studies by N.E. Veraksa and O.M. Dyachenko (Veraksa & Dyachenko, 1996), which revealed that behavior regulation—taken in a generic way as a cultural tool—is internalized by children as a psychological tool for regulating their own behavior.

Previously, we studied this correlation between cultural congruence and creative thinking for pre-school children (Bayanova, 2013). According to those results, children who displayed higher levels of cultural congruence and compliance with age-specific behavior rules exhibited a deficit in creative thinking. Our research into cultural congruence of preschool children employed a dedicated proprietary test where rule categorization was different from the one presented for primary school students (Bayanova & Mustafin, 2016).

The effects of cultural congruence shown on the critical thinking subtests are statistically significant. For the *use of objects* subtest, $F(\text{emp.})=2.935$ (if $p < 0.01$); for the *situation consequences* subtest, $F(\text{emp.})=2.048$ (if $p < 0.01$); for the *building images* subtest, $F(\text{emp.})=2.294$ (if $p < 0.01$); for the *sketches* subtest, $F(\text{emp.})=2.429$ (if $p < 0.01$); for the *hidden form* subtest, $F(\text{emp.})=1.861$ (if $p < 0.01$). These results demonstrate the impact of cultural congruence on critical thinking with a high level of credibility. A detailed analysis of the impact of cultural congruence on creative thinking revealed that this impact is statistically higher in non-verbal creative thinking subtests. The impact is displayed with a lower level of credibility in verbal subtests (*expression* and *verbal association*).

The credibility and validity of our study's results have been ensured through a comprehensive theoretical analysis, a representative sample of respondents, the validity and reliability of the psycho-diagnostic tools, and the use of appropriate methods of statistical data treatment.

Discussion

The previously highlighted fact that cultural congruence has an impact on creative thinking of primary school students may be ascribed to various causes.

First of all, it is noteworthy that there are no typical invariable rules within factors of cultural congruence which would enhance creative thinking of a child. This is the essence of the cultural context and the culturally shaped rules regulating a child's behavior. Thus, the impact of cultural congruence is that it limits creative thinking. This tendency is noticeable in elementary school.

The impact of cultural congruence on creative thinking also deals with the fact that socially accepted conventions limit children's spontaneous activity, since the

rules impose particular behavioral patterns on them. Therefore, children focus more on imitation than on finding their own solutions.

Not coincidentally, cultural congruence had an impact on the subtests determining creative thinking through non-verbal materials. These materials deal with the ability to find unusual ways to use everyday objects, to forecast different consequences of a hypothetical situation, to make specific objects with a set of shapes, to create new drawings from identical figures, and to find figures hidden in poorly structured images.

Conclusion

This study provides additional evidence about the factors that shape a child's capacity for creative thinking.

1. Cultural congruence has an impact on creative thinking. The ANOVA analysis provided empirical evidence that the impact of cultural congruence is statistically significant with a high degree of credibility for non-verbal subtests, including on unusual ways to use an object; forecasting different consequences of a hypothetical situation, making specific objects with a set of shapes; transformation of identical figures into different images; finding forms hidden in a complex and poorly structured image.

2. The impact of cultural congruence on creative thinking is less prominent in the case of verbal subtests. The values of the impact are statistically credible in the case of tests which involve inventing four-word sentences where each word starts with a specific letter, and naming attributes for commonly used words.

3. The empirical data analysis of the research on primary school students leads to the conclusion that a child's compliance with age-specific rules inherent to a normative situation, or, more specifically, the manifestations of cultural congruence in terms of rule-following, has a meaningful impact on the specific forms whereby a child can express creative thinking. Rule-based child behavior restrictions decrease primary school students' capacity for creative thinking.

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